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8 **BEFORE THE**  
9 **CALIFORNIA STATE WATER RESOURCES CONTROL BOARD**

10 HEARING IN THE MATTER OF CALIFORNIA  
11 DEPARTMENT OF WATER RESOURCES AND  
12 UNITED STATES BUREAU OF RECLAMATION  
13 REQUEST FOR CHANGE IN POINT OF DIVERSION  
14 FOR CALIFORNIA WATERFIX

15 SUR-REBUTTAL TESTIMONY OF  
16 PROTESTANT  
17 NICOLE S SUARD, ESQ.

18 Sur-Rebuttal testimony is offered in response to rebuttal testimony by DWR witness Dr.  
19 Nader-Tehran<sup>1</sup> regarding assumptions of water quality in the North Delta at locations other  
20 than NDWA compliance points modeled<sup>2</sup>, regarding DSM2 velocity<sup>3</sup> and temperature  
21 assumptions<sup>4</sup>, and regarding actual impacts based upon actual observed flows compared to  
22 proposed flows under WaterFix operations<sup>5</sup>.

23 1. ASSUMED WATER QUALITY IMPACTS BASED ON MODELING COMPARED TO  
ACTUAL IMPACTS FROM LOW FLOWS IN SUMMER MONTHS.

In DWR-79, page 45, Dr. Nader-Tehrani said:

*“In general the water quality will continue to remain fresh at most places in the North Delta under WaterFix operations (at places upstream of Rio Vista), including areas around Ryer Island.” Furthermore, Dr. Nader-Tehrani said*

*“I would like to reiterate that the modeled exceedances in D-1641 agricultural, municipal, and industrial water quality objectives are not real, and occur mainly due to a difference in*

<sup>1</sup> DWR-79.pdf Written testimony of Dr. Parviz Nader-Tehrani, page 45 of 45, lines 3 through 5.

<sup>2</sup> DWR-50, page 58 of 58 “North Delta Water quality upstream of Rio Vista (including areas around Ryer Island) should continue to remain fresh under WaterFix, DWR-50 page 41 “Water quality in and around Ryer Island has been fresh even during recent droughts.” And Water quality at Rio Vista is not representative of water quality I and around Ryer Island.

<sup>3</sup> DWR-8, slide 27 and 28, regarding Delta Flow Velocity Effects Analysis, point regarding Nine Delta locations, which are representative of the entire Delta.

<sup>4</sup> DWR-8.pdf, page 41 of 58, map of Delta Temperature Effects analysis

<sup>5</sup> SHR-350 and SHR-352

1           *the assumptions in DSM2 and CalSim II, including a difference in the size of the time-step in*  
2           *the two models. Finally, it is my opinion that DSM2 has been properly calibrated and*  
3           *validated, and I believe it represents the best available tool to evaluate the changes in water*  
4           *quality and water levels in the Delta that may occur under WaterFix.”*

5           I disagree with the conclusion and testimony of Dr. Nader-Tehrani, and disagree with the  
6 modeling presented by DWR regarding impacts, flows and temperatures assumed and  
7 projected for Steamboat nearby SHR facility. I base my opinion upon review of flow and  
8 salinity data available to the public online, which demonstrates water quality impacts from low  
9 flows during summer months, such as was experienced in 2015. I have personally been  
10 attending DWR sponsored meetings since 2008, and have consistently asked the same  
11 questions regarding impacts to water quality on Steamboat Slough area from lower flows over  
12 the long term, regardless of the name of the project as the function is the issue. How much  
13 fresh water is diverted from Steamboat Slough and when is the issue. DWR had ample time to  
14 analyze impact to the SHR area of Steamboat Slough for proposed WaterFix project, and did  
15 not do so.

16           However, during the rebuttal phase, DWR modeling representative Dr. Nader-Terhani did  
17 clearly state his assumption that

18           *“In general the water quality will continue to remain fresh at most places in the North Delta*  
19           *under WaterFix operations (at places upstream of Rio Vista), including areas around Ryer*  
20           *Island.”*<sup>6</sup>

21           Dr. Nader-Tehrani statement can be shown to be an incorrect assumption since low flows of  
22 summer 2015 on Steamboat Slough resulted in EC levels higher than what is projected for  
23 WaterFix impacts.

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<sup>6</sup> DWR-79.pdf Written testimony of Dr. Parviz Nader-Tehrani, page 45 of 45

1 Averages do not provide an accurate picture of salinity encroachment due to low freshwater  
2 inflows, at least in the North Delta waterways of Steamboat Slough and lower Sacramento  
3 river below Isleton. My testimony and supporting documents demonstrate that monthly  
4 averages do in fact mask the peak salinity events in low flow periods, and it is those peak  
5 salinity inflow events that can cause damage to surface drinking water. My testimony and  
6 supporting documents also demonstrate that water quality at the NDWA compliance station  
7 above the confluence with Sutter Slough is substantially different from water quality at the  
8 water quality monitoring station downstream of Snug Harbor on Steamboat Slough. My  
9 testimony and supporting documents also demonstrate that water quality on the Sacramento  
10 River above the monitoring station at Rio Vista is substantially different from the water quality  
11 shown at the monitoring station downstream of Isleton on the Sacramento River, which further  
12 demonstrates that each waterway in the North Delta responds differently to reduced flows and  
13 therefore has different low flow impacts, all of which was not analyzed by DWR and USBR for  
14 the WaterFix Project before the Water Board now.

15 Petitioners have provided testimony and documentation indicating that when operational, the  
16 intakes, tunnels and pumps would combine to divert Sacramento River flows into the proposed  
17 tunnel conveyance facilities, leaving as little as 6000 cubic feet per second (cfs) of flow<sup>7</sup> to be  
18 split between the five down river channels and tributaries below the proposed tunnel intakes,  
19 specifically the Sacramento River, Steamboat Slough, Sutter Slough Georgiana Slough and  
20 the Delta Cross Channel, when the gates are open. If operational, WaterFix project would  
21 leave less than the historical lowest fresh outflows recorded for Steamboat Slough from before

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<sup>7</sup> SHR-350, DWR chart of flows downstream of proposed intakes, for a dry year for the months of July, August, September and October, and SHR-352, DWR chart of flows downstream of proposed intakes, for a dry and critical water year, for the months of July, August, September and October, and including the flows diverted into the Delta Cross Channel.

1 either CVP or SWP were built<sup>8</sup>. Petitioners provided no evidence of targeted analysis  
2 validating the assumption of Petitioners witnesses that there would be no negative impact on  
3 water quality for Protestant Snug Harbor Resorts, LLC, a legal user of surface flows and  
4 groundwater located on a peninsula on Steamboat Slough, off Ryer Island<sup>9</sup>.

5 DWR through its computer modeling witness Nader-Tehrani testimony said

6 *“In general the water quality will continue to remain fresh at most places in the North Delta*  
7 *under WaterFix operations (at places upstream of Rio Vista), including areas around Ryer*  
8 *Island.”*<sup>10</sup>

9 As noted in SDWA\_32 pdf, Dr. Nader-Tehrani has been working on water quality modeling  
10 issues since at least 2000<sup>11</sup>. However, using flow and water quality data generated by DWR  
11 itself, as shown primarily on the CDEC website, I am providing evidence to show that SHR use  
12 of both surface fresh water and the drinking water aquifer could be severely negatively  
13 impacted by construction and operation of WaterFix Project Preferred Alternative as proposed  
14 in hearing process. According to Petitioners Witness Dr. Nader-Tehrani

15 *“ Water quality in and around Ryer Island has been fresh even during recent droughts”*<sup>12</sup>,  
16 *and oral testimony*

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<sup>8</sup> SHR-6 1908 description of flows on Steamboat Slough and the Sacramento River in a dry year, highlighted. And SHR-6f, the full description to accompany Survey of the Sacramento River submitted to US House of Representatives: Letter from the Secretary of War, Plus maps.

<sup>9</sup> SHR-360, screen print of CDEC water monitoring stations modified by SHR by adding SHR location on Steamboat Slough as well at the locations of some of the other surface and groundwater users along Steamboat Slough.

<sup>10</sup> Testimony of Dr. Parviz Nader-Tehrani, page 45 of 45, lines three to 5.

<sup>11</sup> SDWA\_32.pdf, page 3.

<sup>12</sup> DWR-50, page 41

1       *“I would consider EC values below 300 as fresh”.*<sup>13</sup>

2       SHR evidence demonstrates that despite the stated recognition by Petitioners witness that  
3       Steamboat Slough has seen fresh water flows historically<sup>14</sup>, SHR evidence shows that in real  
4       life DWR and/or USBR management of flows in the North Delta on lower Steamboat Slough  
5       has resulted in increase in salinity of surface flows at monitoring station SXS<sup>15</sup>. Since  
6       historical records and DWR modeling use different measurements for salinity recording and  
7       modeling, please note the DWR-316 Salinity Conversion Table, and also note other flow  
8       conversion data<sup>16</sup>. Specifically, 2015 DWR/USBR-managed drought flows in the Delta  
9       resulted in an increase in surface water salinity in Steamboat Slough at NDWA, using  
10      September 2015 as an example<sup>17</sup>. Surface water salinity increased even more along lower  
11      Steamboat Slough from 2014 through to the end of 2016, using September 2015 as the  
12      example<sup>18</sup>. The low flows of summer and fall during the 2015 drought are similar to the  
13      projected flows for the same waterway if the WaterFix Project was operational, based upon  
14      DWR's own computer modeling<sup>19</sup>. In other words, WaterFix Project would potentially suspend  
15      flows on Steamboat Slough into a worst-case drought flow pattern every year from July  
16      through October, based upon DWR's own flow charts. Note that SHR-9, page 105 provides a  
17      conversion chart defining 50 mg/L chloride as 350 EC<sup>20</sup>. Yet low flows from September 2015

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<sup>13</sup> See video located at [http://www.waterboards.ca.gov/board\\_info/video.shtml](http://www.waterboards.ca.gov/board_info/video.shtml) May 11, 2017 at location 3:56:23 to 3:56:26

<sup>14</sup> DWR-50, page 58 testimony of Dr. Nader-Tehrani *“North Delta water quality upstream of Rio Vista (including areas around Ryer Island) should continue to remain fresh under WaterFix”.*

<sup>15</sup> SHR-363

<sup>16</sup> SHR-363-2 and DWR-316 Salinity Conversion

<sup>17</sup> SHR-363-3

<sup>18</sup> SHR-363-4

<sup>19</sup> SHR-350, SHR-352 Flow charts provided to SHR during WaterFix hearing process

<sup>20</sup> SHR-9, page 105, Chloride to EC conversion Chart

1 on lower Steamboat Slough showed EC could be between 400 to 620 EC<sup>21</sup>, and above the  
2 “fresh” level as described by Dr. Nader-Tehrani.

3 Negative impacts from DWR/USBR managed low flows in the Delta in 2015 can be  
4 assumed to be an example of what to expect if the same low flows became the normal flow  
5 routine if the WaterFix Project were operational. I observed that increase in surface water  
6 salinity impacted sensitive fruit trees along Snug Harbor Drive, including peaches,  
7 pomegranates, pears and cherries, with roots that reach the shallow groundwater. Other large  
8 trees along our banks died from the roots up through the trunk centers and had to be cut down.  
9 If fresh water flows in a critical dry year like 2015 are higher than what is proposed by the  
10 WaterFix Project for Steamboat Slough, it is logical to assume suspending Steamboat Slough  
11 into a similar low flow pattern from July through October every dry and critical year WaterFix  
12 Project is operational would result in continuous EC levels above 600 on lower Steamboat  
13 Slough<sup>22</sup> WaterFix operations would result in even lower water quality for areas below Isleton  
14 yet still above the Rio Vista monitoring station. <sup>23</sup>Low flows on Steamboat Slough as projected  
15 by WaterFix Project would result in negative impacts to the public drinking water wells at the  
16 SHR facility over time, as well as negatively affect use of surface water for irrigation of  
17 sensitive crops like cherry trees, pears, peaches and plums. Concern for impacts to drinking  
18 water at SHR is not a surprise topic for DWR WaterFix staff. I personally brought the same  
19 issues to the attention of DWR modeling staff in a written comment in 2009 during the draft  
20 BDCP meetings<sup>24</sup>, in a written comments from 2009 to 2017. For example, BDCP modeling

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<sup>21</sup> SHR-363-4

<sup>22</sup> SHR-363-4

<sup>23</sup> SHR-364

<sup>24</sup> SHR-723

1 staff responded to concerns about flow and salinity in a 2010 meeting regarding effects  
2 modeling for reduced North Delta waterways flows in July 2010<sup>25</sup>, which indicated the  
3 possibility of increased salinity on Steamboat Slough from reduced flows.

4 SHR points out that DWR and USBR had full access to the computer modeling and  
5 estimates related to impacts from proposed Bay Delta Conservation Plan actions, and  
6 proposed North Delta barriers proposals of several years ago, and failed to disclose to the  
7 board that both those proposals indicated increases in salinity on Steamboat Slough directly  
8 related to the reduced flow of fresh water.

## 9 2.USE OF INACCURATE BASELINE DATA FOR DSM2.

10 Rebuttal testimony introduced by DWR witnesses analyzed Delta Temperature effects  
11 analysis<sup>26</sup> and Delta Flow Velocity Effects Analysis<sup>27</sup> based upon DSM2 modeling. Only one  
12 location was analyzed for the North Delta for velocity and temperature effects, which is not  
13 logical. In any case, analysis must be based upon correct bathymetry, as noted by DWR own  
14 modeling reviewers<sup>28</sup>. Inaccurate baseline data used for DSM2 modeling is another topic I  
15 have brought to the attention of DWR modelers in the past. My graphics and testimony show  
16 that DSM2 bathymetry for Steamboat Slough is materially incorrect, and that incorrect data  
17 would logically have an effect on the modeled outcomes of flow velocity, water temperature  
18 and flow discharge.

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<sup>25</sup> SHR-407 BDCP graphic of salinity impact from proposed reduced flows for BDCP conveyance plan. And SHR-730.

<sup>26</sup> DWR-8 slide 41 Delta temperature effects analysis

<sup>27</sup> DWR-8 slide 28 Delta flow velocity effects analysis

<sup>28</sup> SHR-104, page 2 Aron Blake USGS presentation graphic

1 I, witness Nicole S. Suard, Managing Member for Snug Harbor Resorts, LLC certify that I  
2 myself compiled the screen prints of documents and graphics contained in the referenced  
3 evidence submitted by Snug Harbor Resorts, LLC for this sur-rebuttal testimony

4 Respectfully submitted,

5 Signed: 